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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/259,145	02/26/99	PAN	3027.105

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MM21/0524

EXAMINER	
MAI, A	
ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 05/24/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

09/259,145

Applicant(s)

Pan et al.

Examiner

Anh D. Mai

Group Art Unit

2814

☒ Responsive to communication(s) filed on Feb 26, 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-31 is/are pending in the application.

Of the above, claim(s) 1-24 is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 25-31 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

☒ *Decision on Petition*

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## **DETAILED ACTION**

### ***Election/Restriction***

1. During a telephone conversation with Mr. Joseph A. Walkowski on April 29, 1999 a provisional election was made without traverse to prosecute the invention of Group I, claims 25-31. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-24 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.
2. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Drawings***

Figures 11-12 and 14-27 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

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***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

3. Claims 25, 26 and 29-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Lu (U.S. Patent No. 5,688,710).

Lu discloses a pre-anneal intermediate structure in the formation of an isolation structure for a semiconductor device similar as claimed including:

a semiconductor substrate 1 having a first surface and a second surface;

at least one first doped area 19A on the substrate first surface;

a diffusion barrier layer 5A over the substrate first surface. (See Fig. 6, col. 2, l.

44-col. 3, l. 33).

With respect to claim 26, the structure of Lu also includes a oxide layer 3 between the substrate first surface and the diffusion barrier layer 5A.

With respect to claim 29, the first doped area 19A of Lu is a P-type impurity.

With respect to claim 30, the first doped area 13A of Lu is a N-type impurity.

With respect to claim 31, the diffusion barrier layer of Lu is silicon nitride.

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu as applied to claims 25, 26 and 29-31 above, and further in view of Mathews et al. (U.S. Patent No. 5,837,378).

Lu discloses a device as discussed supra but fails to extend the diffusion barrier layer 5A over the substrate second surface.

However, Mathews, in a similar device, discloses a barrier layer 154b over the second surface of substrate 150. (See Fig. 2A, col. 4, l. 63-col. 5, l. 10).

It would have been obvious to one having ordinary skill in the art at the time of the invention to form the barrier layer 154b over second surface of the substrate 1 of Lu as taught by Mathews because nitride on the second surface reduces overall stress on the wafer thus prevent warpage.

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**Conclusion**

*Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. Papers should be faxed to Art Unit 2814 via the Technology Center 2800 fax center located in Crystal Plaza 4, room 4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989).*


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh Mai whose telephone number is (703) 305-0575. The examiner can normally be reached on Monday-Friday from 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaudhuri, Olik, can be reached on (703) 305-2794. The fax number for the organization where this application or proceeding is assigned is (703) 308-7722 or -7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center receptionist at (703) 308-0956.

A.M.  
A.MAI.

April 29, 1999

  
Olik Chaudhuri  
Supervisory Patent Examiner  
Technology Center 2800